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PATENT SPECIFICATION

Application Date: May 27, 1927. No. 14,273/27. **280,452**

Complete Accepted: Nov. 17, 1927.

COMPLETE SPECIFICATION.

Improvements in Coffee Mills.

We, MABEL JØRGENSEN and JØRGEN HERTZ, both subjects of the King of Denmark, trading as A. JØRGENSEN & Co., of Jagtvej 157, Copenhagen, Denmark, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to a safety-device for coffee mills of the type in which the outer grinding body normally is kept stationary in any suitable manner, whereas if a nail or another hard object together with the coffee beans comes between the grinding bodies the outer grinding body is coupled by such foreign matter to the rotating inner grinding body so that both of the grinding bodies rotate, thereby preventing damage to the teeth of the grinding bodies.

As is well known, power driven coffee mills sometimes comprise two such grinding bodies only, but more often coffee mills are provided with two cylindrical grinding bodies and two conical grinding bodies, in each instance one body being a rotating inner member and the other a stationary outer member, and the coffee to be ground is passed through these two grinding sets in series. It is therefore to be remarked that as far as mills provided with four grinding bodies are concerned the above named term "the outer grinding body" used also in the following description, refers to the outer body of that set of grinding bodies to which the coffee is first fed.

The means by which the outer grinding body (or a carrier or holder for the same) is normally connected in a rigid manner with the casing of the mill, may for instance in a manner known per se consist of spring pressed studs entering holes in said outer grinding body or carrier or of other suitable devices, and such means form no part of the present invention, which mainly relates to a device for removing, while the mill is running, foreign matters of the kind referred to above. Hitherto, known coffee mills of the type indicated above, suffer from the disadvantage that the foreign object, such as a nail, if it does not occasionally fall out, maintains a constant coupling of the two grinding bodies so that the nail or the like cannot be removed unless the rotation of the mill-shaft is stopped.

According to the invention, part of the outer normally stationary grinding body at or near the point where the beans are fed from the hopper to the grinding bodies is movable relative to the remaining part of the said grinding body, and at a suitable point of the mill casing, for instance, at the bottom of the same, there is an opening adapted to receive the said movable grinding body part through which opening the foreign matter is thrown out due to centrifugal force and/or gravity and the pressure exerted by the inner grinding body, all of which takes place when the movable part enters the said opening after the two grinding bodies have partially rotated. Below the latter there may be positioned a drawer or other receptacle for receiving the foreign matter. It will be understood that the movable part of the outer grinding body will be closed again when the said body is turned back to its initial position, and that the foreign substance may be removed without stopping the rotation of the mill-shaft.

The movable part of the outer grinding body may also perform another function in addition to that mentioned above, viz.: it can be combined with a suitable adjusting device by which said part can be adjusted towards or away from the inner grinding body so that the coffee mill can be adjusted to grind beans of different sizes so that the amount of coffee ground per unit of time remains constant irrespective of the sizes of the beans. The mill is thereby prevented

[Price 1/-]

from working wearily and when used for grinding small beans, the latter are not heated unduly.

By variation also of the movable part of the outer grinding body the feed opening of the mill may be adjusted and the rate of feed of beans thereto regulated.

The movable part of the outer grinding body may be constructed as a pivoted shutter which, if the said body is arranged in a carrier or holder, is pivoted to the latter and which by a suitable adjusting device may be adjusted radially relative to the inner grinding body for the purpose specified above.

An embodiment of the invention is shown in the accompanying drawing, in which:—

Fig. 1 is a vertical cross section through the parts of a coffee mill constructed according to the invention, and

Fig. 2 is a partial sectional plan view along the line II—II of Fig. 1.

On the mill shaft 3 is secured a grinding body 4 surrounded by and co-operating with an annular grinding body 5, which is secured in a cylindrical carrier 6, mounted in the mill-casing 7, in such a manner that it can be rotated therein although normally it is held stationary by two spring actuated studs 8. If a hard foreign body comes into the space between the grinding body 4 and the grinding annulus 5 so that the latter is coupled, by such foreign body, to the inner constantly driven grinding member 4, then the carrier 6 will be rotated in unison with the member 4, the studs 8 being pressed back against the action of their springs 9.

In an opening in the grinding annulus 5 and the carrier 6 there is inserted a shutter or flap 10 carrying a separate part 13 of the grinding annulus 5 and pivoted at 11 to the carrier 6. The shutter 10 can be adjusted into various positions relative to the inner grinding body 4 by means of an adjusting screw 12.

If, therefore, a hard foreign body, together with the coffee beans, is fed into the space between the teeth of the grinding bodies, it will be jammed between the grinding body 4 and the said member 13. This foreign body will then, as above described, without damaging the teeth of the two grinding bodies, couple them together, and the carrier 6 will thereafter overcome the resistance exerted by the spring pressed studs 8 and rotate in unison with the grinding body 4 until the shutter 10 reaches a position opposite to an opening 14 formed in the lower part of the mill casing 7. The shutter 10 will fall down into this opening as shown in dotted lines in Figure 1, i.e. swing about the pivot 11, and the foreign matter will be thrown into a drawer 15 or the like placed below the mill casing. Hereby the rotation of the carrier 6 is stopped while the mill shaft 3 and the grinding body 4 will continue their movement.

The carrier with the outer grinding body may be carried back to the initial position, shown in full lines in Figure 1, by any suitable means. In the embodiment shown, the carrier 6 is provided with a circumferential series of recesses 16 positioned in alignment with a slot 17 formed in the wall of the mill casing. By inserting a pin or the like into one of these recesses the parts 5, 6, 10, 13 may be readjusted in the position shown in Figure 1 while the mill shaft is still running, and the coffee mill will then grind again.

In order that the adjusting screw 12 shall not prevent the rotating movement of the carrier 6 the latter may be provided with a circumferential groove 18 as shown in Figure 2.

By adjustment of the screw 12 the distance or play between the member 13 and the grinding body 4 can be varied, and since the member 13 is mounted at the point where the beans are fed into the space between the grinding bodies, it is obvious that the supply of beans can be regulated by means of the said screw. Such adjustment of the shutter 10 can be effected by any suitable means or mechanism other than that shown, and such means may eventually be combined with an indicator in order that the adjustment made can be read off from outside the mill casing. Other modifications can also be used without departing from the range and scope of the invention. Thus, for instance, the shutter 10 may be provided with a spring serving to open the shutter automatically when it comes to a position opposite to the opening 14. Also the parts 10 and 13 may be made in one piece, if desired, and the carrier 6 may, in some cases, be wholly dispensed with.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A coffee mill of the kind in which, if a hard foreign matter comes between the grinding bodies, a normally stationary outer grinding body is coupled by such foreign matter to the inner grinding body and thus rotates therewith to thereby prevent damage of the teeth of the grinding bodies, characterised by the fact that part of the outer normally stationary grinding body, at or near the point where the coffee beans are introduced into the space between the two grinding bodies, is movable relatively to the remaining part of the said outer grinding body, and that the mill casing for instance at the bottom of the same, is provided with an opening adapted to receive said movable part, through which opening the foreign matter is thrown out when the movable

grinding body enters the said opening after the two grinding bodies have performed part of a revolution.

2. A coffee mill according to Claim 1, in which the outer grinding body is accommodated within a carrier or holder, characterised by the fact that the said movable part of the outer grinding body is secured on a shutter hinged to the said carrier.

3. A coffee mill according to Claim 1 or 2, characterised by a drawer or other receptacle for receiving the foreign matter thrown out from the grinding bodies, being placed below the opening in the mill casing.

4. A coffee mill according to Claim 1 or 2, characterised by the fact that the movable part of the outer grinding body by means of a suitable adjusting device can be adjusted towards or away from the inner grinding body to thereby regulate the supply of coffee beans to the mill.

5. A coffee mill provided with a safety device for the teeth of the grinding bodies substantially as described and shown in the accompanying drawing.

6. A coffee mill provided with a safety device and a device for regulating the supply of beans substantially as described.

Dated the 27th day of May, 1927.

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

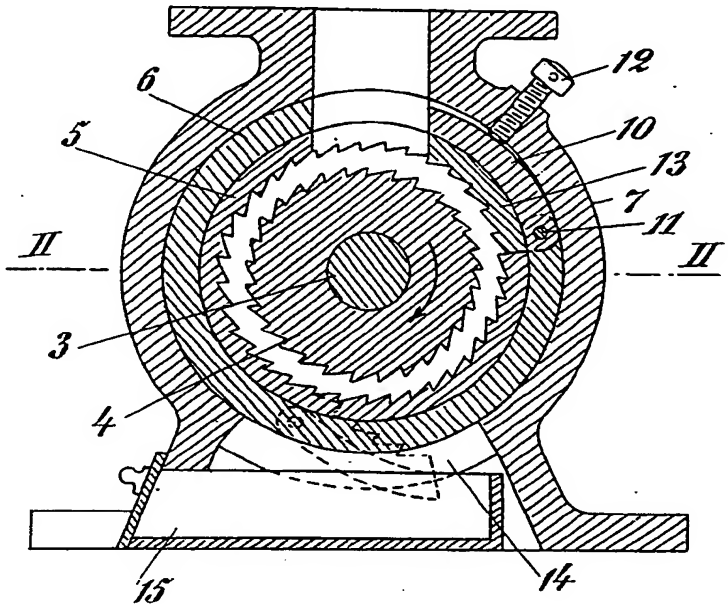
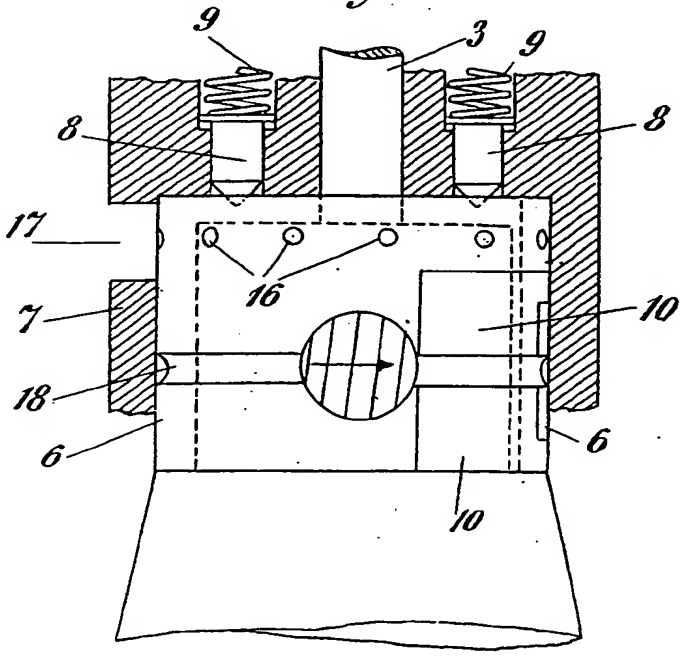


Fig. 2.



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